EMCSF 13.1
12/30/02

444 Hospital Way #300 • Pocatello, Idaho 83201 • (208) 236-6160

Dirk Kempthorne, Governor
C. Stephen Allred, Director

December 30, 2002

RECEIVED
JAN 0 6 2003

Ms. Linda Meyer
U.S. EPA Region X
1200 6th Ave
M.S. WCN-121
Seattle, Washington 98101

Re: IDEQ Comments on the, Remedial Design Report and Remedial Action Work Plan, Dewatering Pit Solids Removal, Simplot Plant Area, Eastern Michaud Flats Superfund Site, November 25, 2002

Dear Ms. Meyer:

The Idaho Department of Environmental Quality (DEQ) has reviewed the above mentioned report and offer the following comments.

The DEQ is in agreement with the new method to demonstrate compliance with the revised performance standards. The DEQ approves of using 11 mg/Kg of arsenic and 2.4 mg/Kg of beryllium as the confirmation standard. The DEQ however, does not agree that only these concentrations should be reported. We therefore request that all chemicals of concern are analyzed for and the concentrations reported.

The DEQ also takes exception that in section 3.2 of the report the excavation will terminate at a total depth of three feet below the visually identified residual solids. Excavation apparently will be halted even if the arsenic and beryllium concentrations exceed the confirmation standard. This seems to limit the removal of contaminated soil resulting from leaching. We request that all remaining soil meet the confirmation standard.

Please contact me at (208) 236-6160 if you have any questions or concerns regarding this matter.

Sincerely,

Douglas M. Tanner
Regional Environmental Manager

C: Tiffany Floyd, DEQ-Pocatello
Dean Nygard, DEQ-Boise
Ward Wolleson, Simplot-Boise
Roger Turner, Shoshone Bannock Tribes

USEPA SF
1274265

444 Hospital Way #300 • Pocatello, Idaho 83201 • (208) 236-6160

Dirk Kempthorne, Governor
C. Stephen Allred, Director

December 27, 2002

Mr. Doug Walker
IDEQ-INEEL Oversight
900 N. Skyline, Suite B
Idaho Falls, ID 83402

Re: Review of Simplot's Draft Institutional Controls Program for the Simplot Plant Area, Eastern Michaud Flats Superfund Site

Dear Doug,

Enclosed please find a copy of the above-mentioned report. As this document deals mostly with gamma radiation associated with the gypsum stack at the Simplot Don plant; I would like to request that a member of your staff review this document. Please have the study reviewed for adequacy and completeness. Of interest is if the study can support Simplot's conclusions and recommendation.

Please provide any comments or concerns back by January 17, 2003. You may contact me at 236-6160 if you have any questions or concerns.

Sincerely,

Douglas M. Tanner
Regional Environmental Manager

C: Ms. Linda Meyer, USEPA-Seattle

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COPY

J.R. SIMPLOT COMPANY P.O. BOX 912 POCATELLO, IDAHO 83204
208/232-6620

AgriBusiness

December 16, 2002

RECEIVED
DEC 20 2002
IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY

Certified Mail: 7001 1940 0004 2841 9129

Tiffany Floyd, Acting Regional Administrator
Department of Environmental Quality
444 Hospital Way, Suite 300
Pocatello, Idaho 83201

Thought this might be easier to read than the fax copy sent in response to your PRR.

RE: Fluoride in Vegetation

Dear Ms. Floyd:

The attached document contains the results and summary of fluoride levels in forage vegetation for the 2002 season as required in our Air Permit under Monitoring, Reporting, and Special Studies, Section 3.1.2 and 4.1.

We believe the elevated fluoride levels at sites 1 and 2 during August and September were probably the results of the dry ambient conditions this year. No process changes have been made during this year that would account for the elevated levels.

Simplot would like to meet with DEQ to discuss the challenges and issues as soon as possible.

Please call me if you have questions or comments.

Sincerely,

Leon C. Pruett
Environmental Safety & Health Manager

Attachment:
C: Tom Edwards, Acting Air Quality Manager, DEQ Pocatello
Del Butler - Simplot (w/o attachment)
Alan Prouty – Simplot

File: Fluoride in Forage 2002

PRO
Results and summary of fluoride levels in f

04041

LEVELS OF FLUORIDE IN VEGETATION SAMPLES COLLECTED FROM POCATELLO AREAS DURING THE 2002 GROWING SEASON

BAICOR INC.
NOVEMBER 2002

DR. G.W. MILLER, PROFESSOR EMERITUS
CONSULTANT

ASSOCIATE INVESTIGATORS
MR. MICHAEL MILLER,B.S.
MRS. RUTH MILLER, B.A.
DR. SALAM AWADA
DR. OLGA VEDINA

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2002 Report

Summary

During the 2002 growing season (June - September) alfalfa and pasture grass were sampled in Pocatello and analyzed for fluoride. Sites were divided into sampling areas as follows: Site 1 (North, South and South Duplicate); Site 2 (North and South); Site 3 (North and South); Site 4; Site 5 (East, West and West Duplicate); Site 6 (East and West); Sites 7,8,11 and 12. A control area was sampled in Logan, Utah. This sample was divided into two portions. One portion was labeled control and left for analysis in the Logan laboratory. The second portion was taken to Pocatello and stored with other samples taken during a survey trip and labeled Logan Trip. As a further check Site 1, South was spiked with 50.1 - 83 ppm fluoride and control with about 17.0 ppm fluoride. The accuracy of recovery in 16 spiked samples was from 80 - 106% (most spiked samples in the 90% recovery range).

The mean fluoride values in areas showing higher fluoride concentrations were within a 2 mile radius of the phosphate plants. Areas 1 and 2 were East of the fluoride source. Mean values here were 40 - 55 ppm. Sites 3, 4, 5 and 11 showed mean levels of 11 - 20 ppm. The 4 remaining sites were up to 5 miles from the source and had levels from 9 - 12 ppm. The highest levels found at Sites 1 and 2 during August were 89 and 94, respectively. Control levels in Logan had a mean value of 8 ppm. The Trip sample had a mean value of 8 ppm. Samples from Sites 1 and 5 were identical to duplicate samples taken at the same sites.

General Information

Weather information for the growing season in Pocatello is outlined in Table 1. The sample dates were timed to be approximately 2 weeks apart during the growing season. Vegetation samples were taken on 5 June; 26 June; 11 July; 30 July; 9 August; 22 August; 5 September and 23 September. Table 2 shows information from our log book on the location of sites in Pocatello, owner of field, dates, crop grown, condition of the crop and fluoride levels. Table 3 shows individual values for all sites as well as mean values.

WORK PLAN

Fluoride Survey in 2002

Sampling Specifications

Sample Location

The Pocatello area would be sampled every two weeks within the industrial areas identified on the maps (Fig. 1 and 2). By May 15th of each year a list will be submitted to Simplot giving the following information:

1. Fifteen possible field locations for each area (designated on appropriate maps and selected from the 16 marked sites).

2. Names of field owners or lease holders.

3. Contact people with telephone numbers for each field location.

Quantity and Frequency of Sampling

Fields will be sampled during the growing season as determined by field survey (when 50% of fields have an average forage height over two inches; survey will be initiated and ended when 50% of fields have an average height of forage growth less than two inches). The length of growing season will be determined for each area.

The growing period is expected to cover a four month period, June though September. Specifications for this section are illustrated in the following table:

Area	# Samples/ Area	Months Sampling	Sampling Frequency	Total Samples/ Area/Year
Pocatello	Target is 15	4	2/Month	120

3. Sample Collection Procedures

Specific routes will be followed to collect samples. Routes will begin by collecting samples first from the areas most remote from the sources of fluoride and followed by samples taken from areas increasing in proximity to avoid sample contamination.

Actual samples will be taken using the following procedure:

(a) After arriving at the desired field location, fields will be visually surveyed to determine if the average height of the forage is greater than two inches. If not the field will not be sampled.

(b) If the average height of the forage is greater than 2 inches, the contact person (if available) will be notified before forage samples are taken.

(c) Notes will be kept in a logbook concerning the condition of the field.

(d) Samples will be taken using a "Z" pattern. Each sample shall consist of no less than 10 clippings taken no less than 10 feet apart. Clippings comprising each sample should be of sufficient quantity to half fill a 3 gallon bucket.

(e) The forage sample in the container will be cut up until the maximum length is one inch and thoroughly mixed.

(f) The date and field on a lunch-sized paper bag will be noted. The bag will be half-filled with the clipped forage sample and folded shut.

(g) Left-over sample not to be analyzed will be discarded on the property from which it was taken.

NOTE: No samples will be taken from any forage less than two inches high.

Samples will be taken from standing forage.

Duplicates shall be taken from one-half of the samples in each area and held for nine months.

All results of sampling and analysis will be released to J.R. Simplot Company.

Sampling Records

A log containing the following information will be made of the field work:

(a) Date of Sampling;

(b) Field identification number;

(c) Field condition during sampling:

-Whether recently cut (no sample taken)

-Which cutting (1st, 2nd, 3rd, if known)

-Whether healthy, heavy or sparse;

- Injury symptoms (pathogens, toxicity, nutritional)

(d) Is the field being grazed; and

(e) Is an alternative field being sampled (reason).

Analytical Requirements

For analyses of plant materials, samples were oven-dried in paper sacks at 80 C for at least 48 hours, finely ground in a Wiley mill and stored in a dry place until used.

A potentiometric method outlined by the Association of Official Analytical Chemists (Official Methods of Analysis of the Association of Official Analytical Chemists (AOAC), Edit. K. Helrick, 15th Edition. pages 51-56, 1990) will be followed in preparing the various forage samples for fluoride determinations and in making fluoride standard curves.

For analysis, one-fourth gram of a previously-ground sample was placed in an acid-cleaned plastic beaker to which was added 1 milliliter (ml) of analytical grade acetone for wetting of the dry material. Most of the acetone was allowed to evaporate from the material in a fume hood. Twenty ml of 0.05 N nitric acid solution was added. This mixture was stirred for at least 30 minutes with a magnetic stirrer, following which 20 ml of 0.1 N potassium hydroxide solution were added and stirred an additional 30 minutes. Next, 5 ml of 0.2 N nitric acid solution were added along with 5 ml of 0.4 M sodium citrate solution (pH 5.5), containing 1 part per million (ppm) fluoride. Samples were analyzed in duplicate using (two different digests) 2 fluoride electrodes. If the analyses differed they were repeated. Standards were run at least daily using 0.1 to 10 ppm samples. Periodically, to maintain quality control vegetation samples containing known fluoride concentrations were analyzed. Amounts of fluoride in each sample were calculated as ppm dry weight of plant material using the equation:

$$\text{ppm F (ug/g)} = \frac{(C - 0.1)\ 50}{W}$$

where:

C = ppm F from standard curve.
W = grams of sample used.
0.1 = ppm of F present in the sodium citrate solution.
50 = total ml of solution.

Supplementary Information to Include in the Fluoride Survey Plan for J.R. Simplot for 2002.

I. Alternative Field Selection.

The sampling sites will be divided into 5 categories depending on their distance from the emission source as follows:

a. 0-1 miles
b. 1-2 miles
c. 2-3 miles
d. 4-5 miles

In the event sites must be changed because of crops being grown other than forage crops, etc, an alternative site will be selected from the same site category (distance from the emission source).

II. Description of Potentiometric Instrument and Standard Curve Determination.

1. The potentiometric instrument is an Orion 720 A that measures directly into relative millivolts. Any units may be used for calibration. The direct measurement technique involves calibrating the 720 A with one to five standards of known concentration. Unknown sample concentrations are then read directly from the display in the concentration units used for calibration. During calibration the most dilute standard should always be used first. The 720 A automatically recognizes slope direction. When 3 or more standards are used the instrument uses a point to point calibration scheme. When measuring in a particular region of the curve the electrode slope for that region is employed in the calibration of sample concentration. The electrode slope displayed after calibration is the average slope for all the segments of the entire calibration curve. Use of the scheme increases accuracy in the different regions of the calibration curve. Blank correction occurs automatically when three or more standard are used. The standards used for calibration do not need to include a blank.

Six standard solutions of fluoride will be used to determine the standard curve as follows: 10 ppm, 5 ppm 2 ppm, 1 ppm 0.5 ppm, and 0.2 ppm. Small plastic acid-washed containers will be used for the standard solutions. The standard solution will be placed into a plastic container containing a stirring bar. The electrode will be inserted into this solution about 12 mm and stirred magnetically. Relative mv readings will be noted at 3 minutes intervals until change is <0.2 mv/min. The electrodes are then removed blotted lightly with absorbent paper, and repeated with 0.5, 1.0, 2.0, 5.0, and 10.0 ppm solutions. Two electrodes on two separate potentiometers are used for fluoride determination. A separate standard curve will be used for each electrode. Measurement in millivolts will be plotted against concentrations of standard solutions using semi-logarithmic 2 cycle paper, samples will be remade and reanalyzed.

The relationship between the Δ mv and the fluoride level is linear with a semi-logarithmic graph when the fluoride concentration range is between 80 - 200 ppm. The co-efficient of variation of Δ mv on each standard point (0.2, 0.5, 2.0, 5.0 and 10.0 ppm F) was in test results 2-3%.

III. Plan to Determine the Quality of Analysis and Control.

(1) A sample blank will be prepared using procedures outlined previously for preparation of the plant material. Plant material will be used from an area remote form the fluoride emitting source containing low fluoride in the tissue. A known amount of fluoride will be added to the sample solution and percent of recovery determined.

(2) Spike materials will be used in order to assess percent recovery on one or more of the samples. The spike material will consist of the prepared plant sample to which a known amount of analyte (standard NaF) will be added. This should not be excessive in relation to the amount present (e.g., about 2x).

The analyte added should be in the same chemical form as present in the samples for accurate determination. The recovery rate of standard fluoride added to the sample with the fluoride electrode has been found to be over 80% when measuring 20-100 ppm in the sample. Results of a spiked sample will be included with each analysis survey during 2002.

Table 1. WEATHER CONDITIONS IN POCATELLO DURING THE 2001 GROWING SEASON.

DATE	CONDITIONS OF TIME OF SAMPLING
6/5/02	Clear and bright sunny day, wind from South West.
6/26/02	No wind yet, nice day.
7/11/02	No wind yet, hot sunny day.
7/30/02	Sunny, hot, no wind yet 11:30 am about 80 degrees.
8/9/02	Warm sunny day, no wind yet, 8:40 am, about 70 degrees.
8/22/02	Cool and sunny, no wind yet, 8:25 am, about 65 degrees.
9/5/02	Partly cloudy, cool, slight wind from No. East, 9:36 am.
9/23/02	Clear and warm, 11:00 am, about 75 degrees.

Fluoride Analysis

Fluoride values for the plant samples collected at the various sites throughout the growing season are shown in Table 3 and illustrated in Figures 1-5. Eleven sites located up to 5 miles from the manufacturing source had mean fluoride values ranging from 8 - 15 ppm. Individual fluoride values at these sites at different times in the growing season ranged from 2 to 38 ppm. Site L (#4) had a mean value of 20 ppm. This site (#4) had values from 6 - 43 ppm at sometime during the growing season. Four sites within a two mile radius of the fluoride source had mean fluoride values from 40 to 55 ppm. Individual high fluoride values at these 4 sites (1 North, 1 South, 2 North, 2 South) were 82 - 94 ppm on 8/9/02. Control mean value of the Logan, Utah Site was 8 ppm fluoride and ranged from 1 - 15 ppm throughout the growing season.

Figure 6 illustrates the location of sites in the Pocatello area showing mean fluoride values for the season. Average fluoride values for each site is shown in relation to location and distance from phosphate plants.

Figure 7 illustrates a fluoride concentration map of Pocatello in the sampling area. Symbols denote the plant species sampled. The fluoride concentrations are shown in shaded areas at 0 - 19 ppm, 20 - 39 ppm, and over 40 ppm. Table 4 shows the average fluoride content in plant samples over a 5 year period 1997-2002. Average values for 2001 and 2002 are similar. Table 5 is a list of the various sample sites showing the coordinates using GPS.

Table 2. Log information on Pocatello Sites. 2002

A. (#1 North)
Owner: Rulon Gull

Date	Crop	Condition	ppm Fluoride
6/5/02	Alfalfa	Great, Recently cut, irrigated.	33
6/26/02	Alfalfa	Great	33
7/11/02	Alfalfa	Good	29
7/30/02	Alfalfa	Great and ready to cut	52
8/9/02	Alfalfa	Great and ready to cut	85
8/22/02	Alfalfa	Great, just cut	38
9/05/02	Alfalfa	Good	31
9/23/02	Alfalfa	Good	18

B. (#1 South)
Owner: Rulon Gull

Date	Crop	Condition	ppm Fluoride
6/5/02	Alfalfa	Great, Recently cut, irrigated.	32
6/26/02	Alfalfa	Great	28
7/11/02	Alfalfa	Good	38
7/30/02	Alfalfa	Great and ready to cut	46
8/9/02	Alfalfa	Great and ready to cut	89
8/22/02	Alfalfa	Great, just cut	35
9/05/02	Alfalfa	Good	33
9/23/02	Alfalfa	Good	28

C. (#1 South Duplicate)
Owner: Rulon Gull

Date	Crop	Condition	ppm Fluoride
6/5/02	Alfalfa	Great, Recently cut, irrigated.	33
6/26/02	Alfalfa	Great	28
7/11/02	Alfalfa	Good	38
7/30/02	Alfalfa	Great and ready to cut	45
8/9/02	Alfalfa	Great and ready to cut	86
8/22/02	Alfalfa	Great, just cut	33
9/05/02	Alfalfa	Good	36
9/23/02	Alfalfa	Good	29

E. (Control-Sample Remained in Logan)

Owner: Kent Frandsen

Date	Crop	Condition	ppm Fluoride
6/5/02	Grass	Good	4
6/26/02	Grass	Good	8
7/11/02	Grass	Good	9
7/30/02	Grass	Good	11
8/9/02	Grass	Good	15
8/22/02	Grass	Good	12
9/05/02	Grass	Good	1
9/23/02	Grass	Good	2

G. (Control-Sample Taken on Fluoride Trip)

Owner: Kent Frandsen

Date	Crop	Condition	ppm Fluoride
6/5/02	Grass	Good	5
6/26/02	Grass	Good	8
7/11/02	Grass	Good	11
7/30/02	Grass	Good	11
8/9/02	Grass	Good	12
8/22/02	Grass	Good	12
9/05/02	Grass	Good	1
9/23/02	Grass	Good	1

H. (#2 North)

Owner: Payne Wiegel

Date	Crop	Condition	ppm Fluoride
6/5/02	Grass	Good, tall, ready to cut	15
6/26/02	Grass	Good, just cut	30
7/11/02	Grass	Ok, grazed	43
7/30/02	Grass	Less than 2 inches	*
8/9/02	Grass	Good, grazed	82
8/22/02	Grass	Good	48
9/05/02	Grass	Good	60
9/23/02	Grass	Good, grazed	43

I. (#2 South)
Owner: Payne Wiegel

Date	Crop	Condition	ppm Fluoride
6/5/02	Grass	Good	32
6/26/02	Grass	Good, irrigated	23
7/11/02	Grass	Good, tall	53
7/30/02	Grass	Good, irrigated and grazed	58
8/9/02	Grass	Good	94
8/22/02	Grass	Good, grazed	67
9/05/02	Grass	Good, grazed	38
9/23/02	Grass	Great	75

J. (#3 South)
Owner: Russel Reese

Date	Crop	Condition	ppm Fluoride
6/5/02	Grass	Good	8
6/26/02	Grass	Good	11
7/11/02	Grass	Ok	25
7/30/02	Grass	Ok	28
8/9/02	Grass	Good	27
8/22/02	Grass	Good	11
9/05/02	Grass	Good	5
9/23/02	Grass	Good	2

K. (#3 North)
Owner: Russel Reese

Date	Crop	Condition	ppm Fluoride
6/5/02	Grass	Good	6
6/26/02	Grass	Good	11
7/11/02	Grass	Ok	17
7/30/02	Grass	Ok	30
8/9/02	Grass	Good	30
8/22/02	Grass	Good	14
9/05/02	Grass	Good	3
9/23/02	Grass	Good	2

L. (#4)

Owner: Randy Chandler

Date	Crop	Condition	ppm Fluoride
6/5/02	Grass	Good, grazed	6
6/26/02	Grass	Good	9
7/11/02	Grass	Good	18
7/30/02	Grass	Good	27
8/9/02	Grass	Good	35
8/22/02	Grass	Good	43
9/05/02	Grass	Good	15
9/23/02	Grass	Good	4

M. (#5 East)

Owner: Dean Williams

Date	Crop	Condition	ppm Fluoride
6/5/02	Alfalfa	Great, ready to cut, irrigated.	4
6/26/02	Alfalfa	Great, recently cut	9
7/11/02	Alfalfa	Good	12
7/30/02	Alfalfa	Great and ready to cut	11
8/9/02	Alfalfa	Great, recently cut	38
8/22/02	Alfalfa	Great	8
9/05/02	Alfalfa	Great, irrigated	1
9/23/02	Alfalfa	Great, recently cut	8

N. (#5 West)

Owner: Dean Williams

Date	Crop	Condition	ppm Fluoride
6/5/02	Alfalfa	Great, ready to cut, irrigated.	4
6/26/02	Alfalfa	Great, recently cut	7
7/11/02	Alfalfa	Good	11
7/30/02	Alfalfa	Great and ready to cut	17
8/9/02	Alfalfa	Great, recently cut	35
8/22/02	Alfalfa	Great	4
9/05/02	Alfalfa	Great, irrigated	4
9/23/02	Alfalfa	Great, recently cut	10

O. (#5 West Duplicate)
Owner: Dean Williams

Date	Crop	Condition	ppm Fluoride
6/5/02	Alfalfa	Great, ready to cut, irrigated.	4
6/26/02	Alfalfa	Great, recently cut	7
7/11/02	Alfalfa	Good	9
7/30/02	Alfalfa	Great and ready to cut	15
8/9/02	Alfalfa	Great, recently cut	38
8/22/02	Alfalfa	Great	4
9/05/02	Alfalfa	Great, irrigated	4
9/23/02	Alfalfa	Great, recently cut	6

P. (#6 East - By Home)
Owner: Floyd Johnson

Date	Crop	Condition	ppm Fluoride
6/5/02	Grass	Good, grazed	6
6/26/02	Grass	Good, grazed	9
7/11/02	Grass	Good	17
7/30/02	Grass	Good, irrigated	18
8/9/02	Grass	Good	22
8/22/02	Grass	Good, tall, irrigated	23
9/05/02	Grass	Good	2
9/23/02	Grass	Good	13

Q. (#6 West)
Owner: Floyd Johnson

Date	Crop	Condition	ppm Fluoride
6/5/02	Grass	Good	3
6/26/02	Grass	Good, grazed	7
7/11/02	Grass	Good	15
7/30/02	Grass	Good	11
8/9/02	Grass	Good, tall ready to cut	14
8/22/02	Grass	Good, grazed	9
9/05/02	Grass	Good	1
9/23/02	Grass	Good	4

R. (#7)

Owner: Garth Turnipseed

Date	Crop	Condition	ppm Fluoride
6/5/02	Grass	Great, grazed	7
6/26/02	Grass	Good, grazed	8
7/11/02	Grass	Good	12
7/30/02	Grass	Good	10
8/9/02	Grass	Great	17
8/22/02	Grass	Good	10
9/05/02	Grass	Good	2
9/23/02	Grass	Good	5

S. (#8)

Owner: Elden Bybee

Date	Crop	Condition	ppm Fluoride
6/5/02	Grass	Great, irrigated	5
6/26/02	Grass	Great, recently cut, irrigated	9
7/11/02	Grass	Great	10
7/30/02	Grass	Great, ready to cut	13
8/9/02	Grass	Great, ready to cut	17
8/22/02	Grass	Great, grazed	10
9/05/02	Grass	Great	4
9/23/02	Grass	Great, recently cut	3

T. (#11)

Owner: Utah Power

Date	Crop	Condition	ppm Fluoride
6/5/02	Grass	Good	5
6/26/02	Grass	Great	8
7/11/02	Grass	Great, grazed	13
7/30/02	Grass	Great, grazed	15
8/9/02	Grass	Great, grazed, irrigated	22
8/22/02	Grass	Great, grazed	20
9/05/02	Grass	Great, grazed	6
9/23/02	Grass	Great, grazed	3

U. (#12)

Owner: Rick Dixion

Date	Crop	Condition	ppm Fluoride
6/5/02	Alfalfa	Great, ready to cut	4
6/26/02	Alfalfa	Great, recently cut	6
7/11/02	Alfalfa	Great	11
7/30/02	Alfalfa	Great and ready to cut	15
8/9/02	Alfalfa	Great, recently cut	14
8/22/02	Alfalfa	Great	12
9/05/02	Alfalfa	Great	5
9/23/02	Alfalfa	Great, recently cut	2

Table 3. Combined Tabular Data For The Year

Fluoride Content In Plant Samples From Pocatello, 2002

Old Site	Type	6/5 ppm	6/26 ppm	7/11 ppm	7/30 ppm	8/9 ppm	8/22 ppm	9/5 ppm	9/23 ppm	AVERAGE ppm
A (1) North	Alfalfa	33	33	29	52	85	38	31	18	40
B (1) South	Alfalfa	32	28	38	46	89	35	33	28	41
C (1) South Duplicate	Alfalfa	33	28	38	45	86	33	36	29	41
D (1) South Spiked	Alfalfa	104[1]	92[3]	100[5]	106[7]	144[9]	85[11]	95[13]	84[15]	
E (C) Logan	Grass	4	8	9	11	15	12	1	2	8
F (C) Logan Spiked	Grass	16[2]	22[4]	25[6]	26[8]	31[10]	25[12]	9[14]	15[16]	
G (C) Control Trip	Grass	5	8	11	11	12	12	1	1	8
H (2) South	Grass	32	23	53	58	94	67	38	75	55
I (2) North	Grass	15	30	43	*	82	48	60	43	46
J (3) South	Grass	8	11	25	28	27	11	5	2	15
K (3) North	Grass	6	11	17	30	30	14	3	2	14
L (4)	Grass	6	9	18	27	35	43	15	4	20
M (5) East	Alfalfa	4	9	12	11	38	8	1	8	11
N (5) West	Alfalfa	4	7	11	17	35	4	4	10	12
O (5) West Duplicate	Alfalfa	4	7	9	15	38	4	4	6	11
P (6) East - By Home	Grass	6	9	17	18	22	23	2	13	14
Q (6) West	Grass	3	7	15	11	14	9	1	4	8
R (7)	Grass	7	8	12	10	17	10	2	5	9
S (8)	Grass	5	9	10	13	17	10	4	3	9
T (11)	Grass	5	8	13	15	22	20	6	3	12
U (12)	Alfalfa	4	6	11	15	14	12	5	2	9

1. South 1 spiked with 83.5 ppm F, 87% recovery.
2. Logan sample spiked with 16.7 ppm F, 77% recovery.
3. South 1 spiked with 83.5 ppm F, 76% recovery.
4. Logan sample spiked 16.7 ppm F, 87% recovery.
5. South 1 spiked with 67 ppm F, 85% recovery.
6. Logan sample spiked with 16.7 ppm F, 94% recovery.
7. South 1 spiked with 67 ppm F, 90% recovery.
8. Logan sample spiked with 16.7 ppm F, 88% recovery.
9. South 1 spiked with 67 ppm F, 87% recovery.
10. Logan sample spiked with 16.7 ppm F, 94% recovery.
11. South 1 spiked with 67 ppm F, 78% recovery.
12. Logan sample spiked with 16.7 ppm F, 81% recovery.
13. South 1 spiked with 67 ppm F, 90% recovery.
14. Logan sample spiked with 16 ppm F, 78% recovery.
15. South 1 spiked with 67 ppm F, 85% recovery.
16. Logan sample spiked with 16 ppm F, 81% recovery.

* Means that the sample was less than 2 inches from over grazing or harvesting of crop.

Table 4.

Average Fluoride Content (ppm) In Plant Samples From Different Sites In Pocatello, 1998 and 1999, 2000, 2001 and 2002.

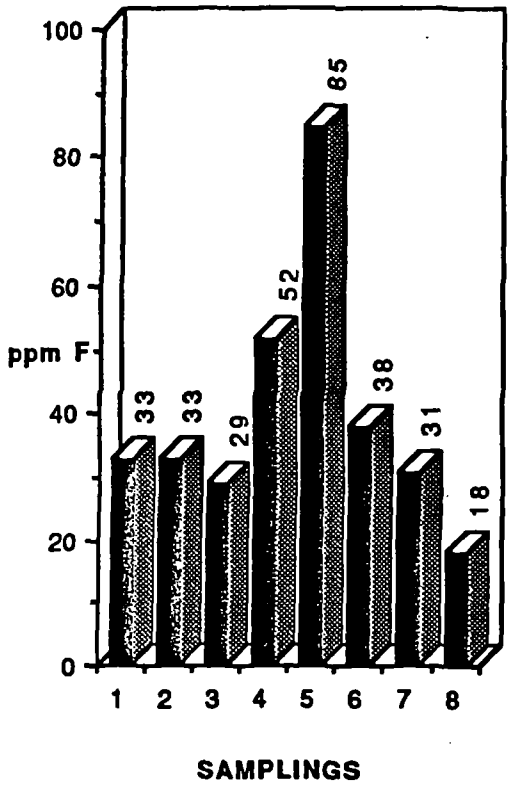
		1998	1999	2000	2001	2002
#1	Alfalfa	33	35	36	40 N, 46 S.	40 N, 41 S.
#2	Alfalfa	21	42	44	34 N, 40 S.	46 N, 55 S.
#3	Alfalfa	13	23	18	15 N & S.	14 N, 15 S.
#4	Grass	21	26	23	18	20
#5	Alfalfa	12	14	12	8 E & W	11 E, 12 W.
#6	Grass	13	14	13	14 E, 12 W.	14 E, 8 W.
#7	Alfalfa	12	18	14	12	9
#8	Alfalfa	10	19	13	9	9
#10	Grass	23	20	20		
#11	Grass	18	32	26	15	12
#12	Alfalfa	14	22	17	12	9
#13	Grass	23	19	21		
#14	Grass	16	13	12		
#15	Alfalfa	35	23	19		
#18	Grass	30	31	24		
#22	Alfalfa				39	

N = North
S = South
E = East
W = West

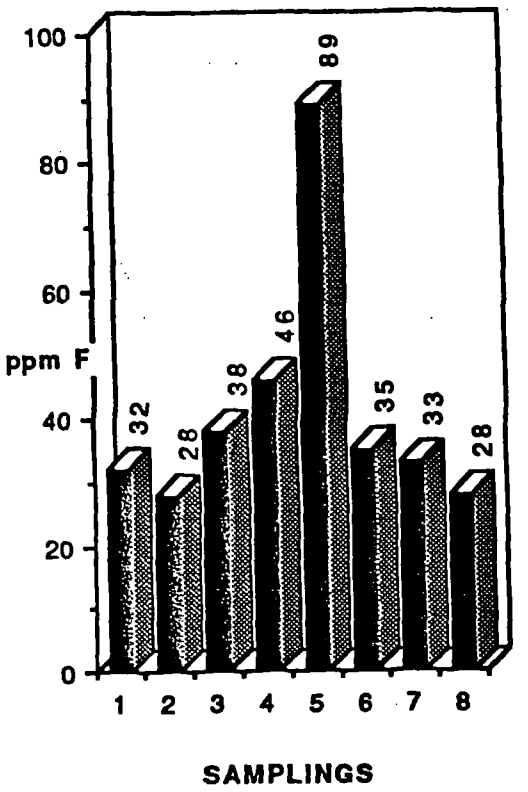
Table 5		
Field	Owner	Position
Control Logan	Kent Frandsen	N41.735 W111.86
Simplot		N42.91 W112.52
1	Rulon Gull	N42.903 W112.495
2	Payne Weigel	N42.916 W112.496
3	Russel Reese	N42.933 W112.509
4	Randy Chandler	N42.934 W112.476
5	Dean Williams	N42.950 W112.500
6	Floyd Johnson	N42.950 W112.488
7	Garth Turnipseed	N42.930 W112.510
8	Eldon Bybee	N42.940 W112.475
11	Utah Power	N42.935 W112.489
12	Rick Dixon	N42.933 W112.496

Figure 1

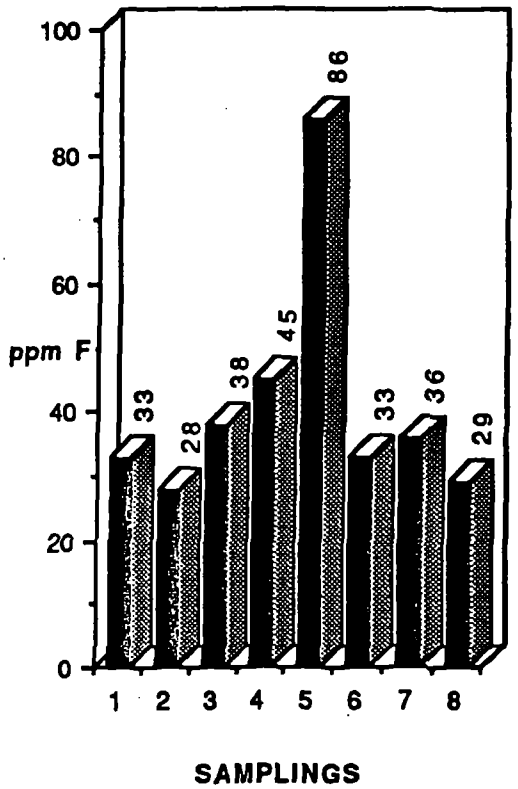
ALFALFA, AREA - A (#1 NORTH)



ALFALFA, AREA - B (#1 SOUTH)



ALFALFA, AREA - C (#1 SOUTH B)



GRASS, AREA - E (#C LOGAN)

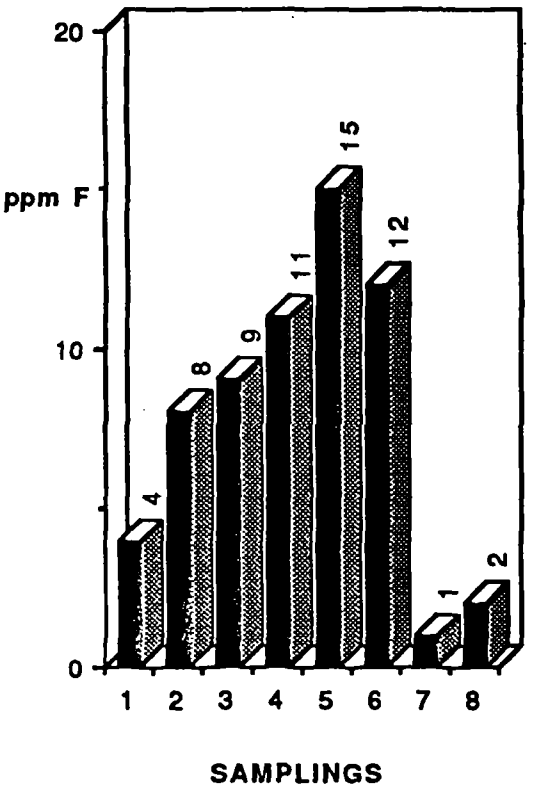
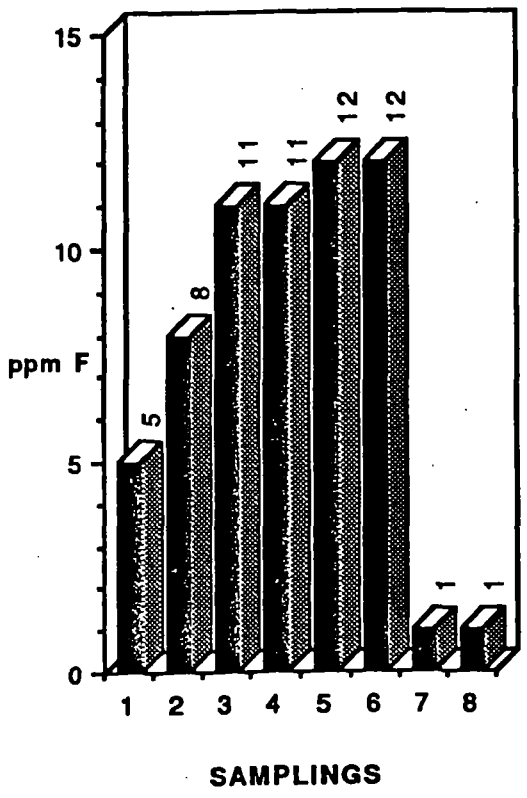
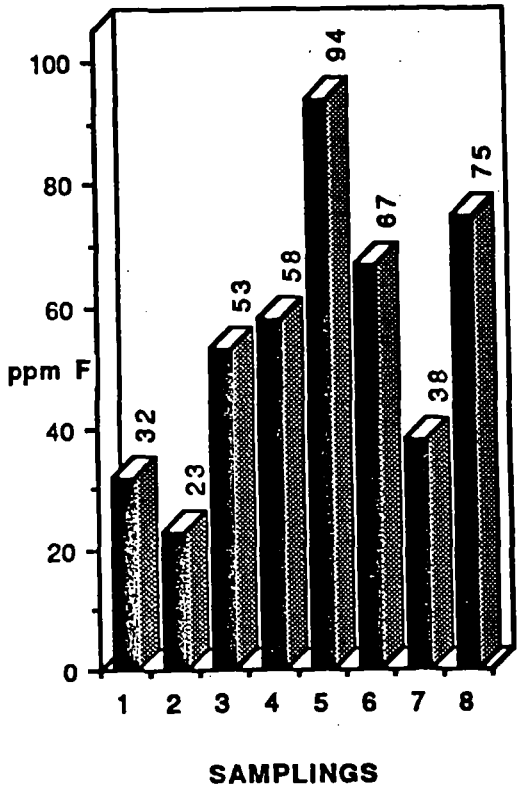


Figure 2

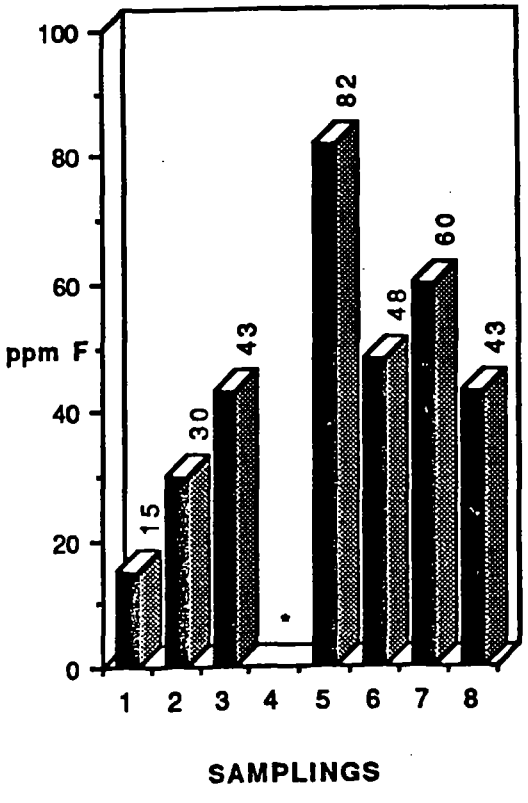
GRASS, AREA -G(#C CONTROL TRIP)



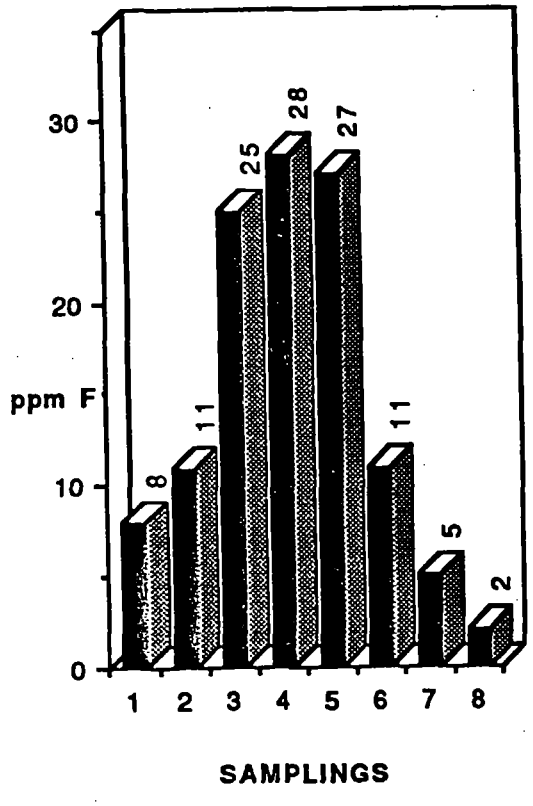
GRASS, AREA - H (#2 SOUTH)



GRASS, AREA - I (#2 NORTH)



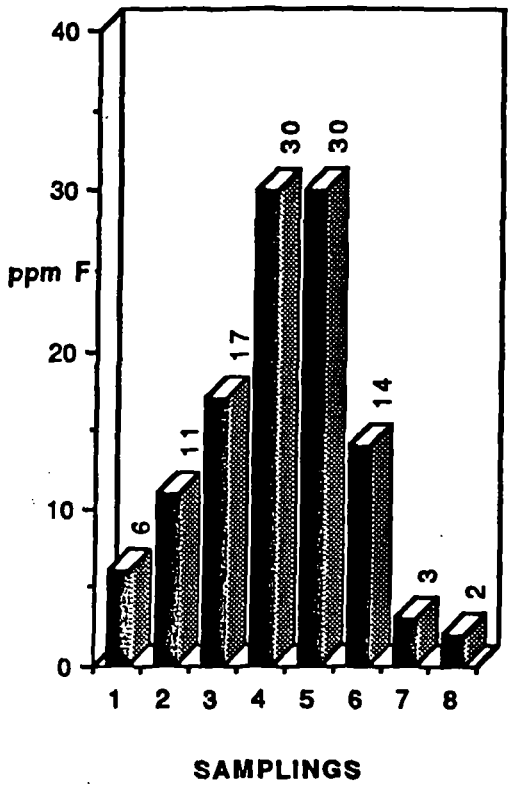
GRASS, AREA - J (#3 SOUTH)



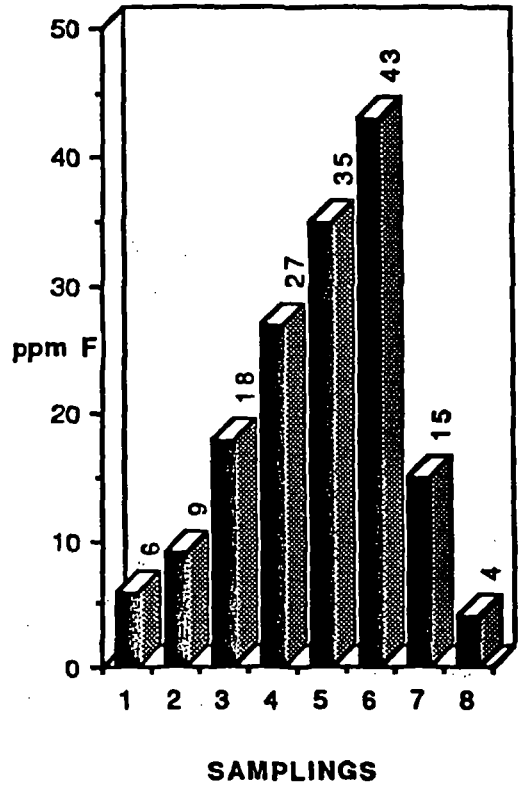
* Less than 2 inches, Not Sampled.

Figure 3

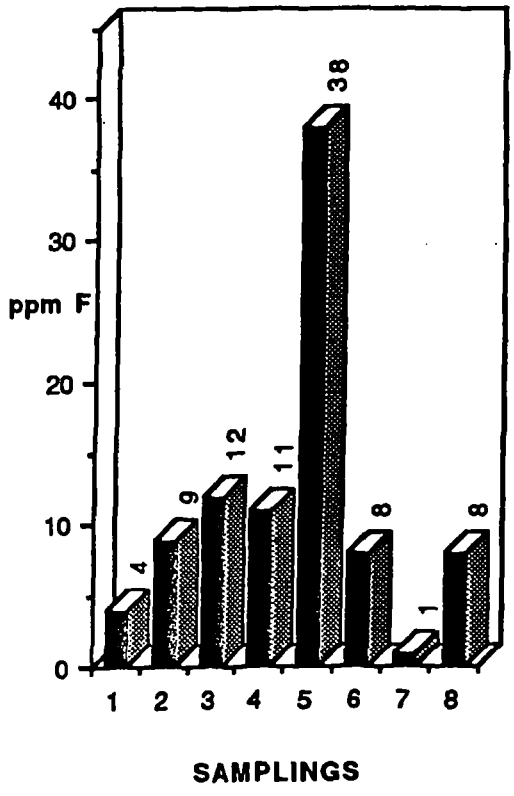
GRASS, AREA - K (#3 NORTH)



GRASS, AREA - L (#4)



ALFALFA, AREA - M (#5 EAST)



ALFALFA, AREA - N (#5 WEST)

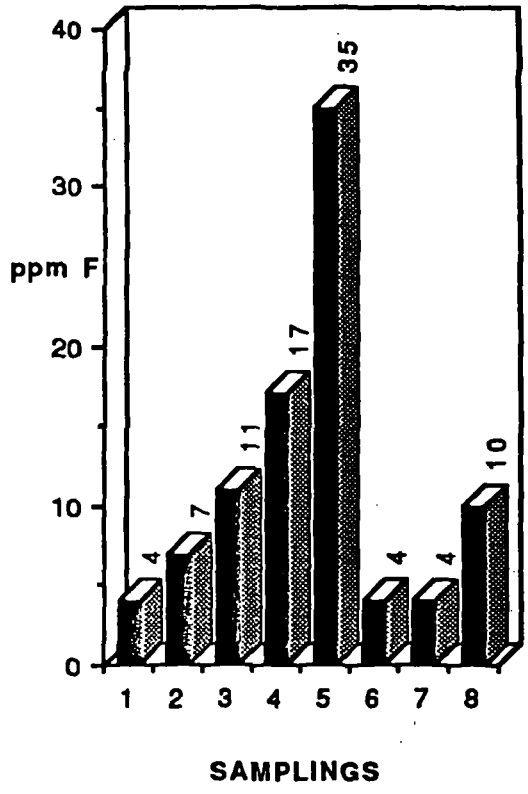
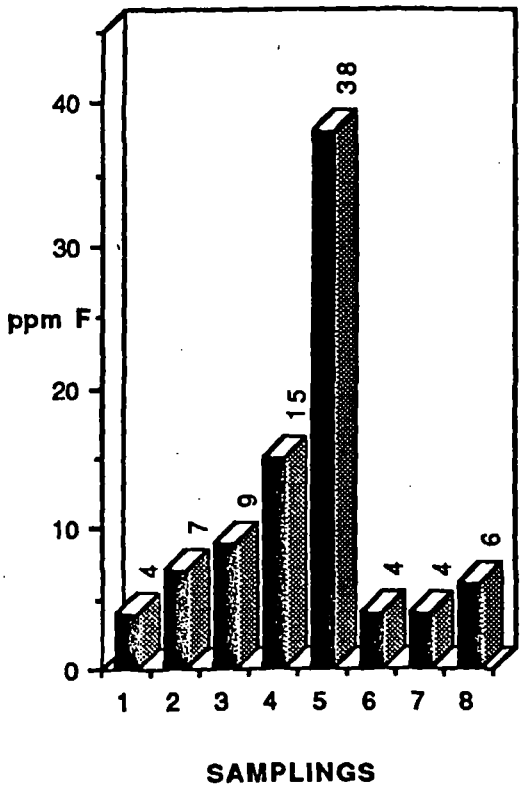
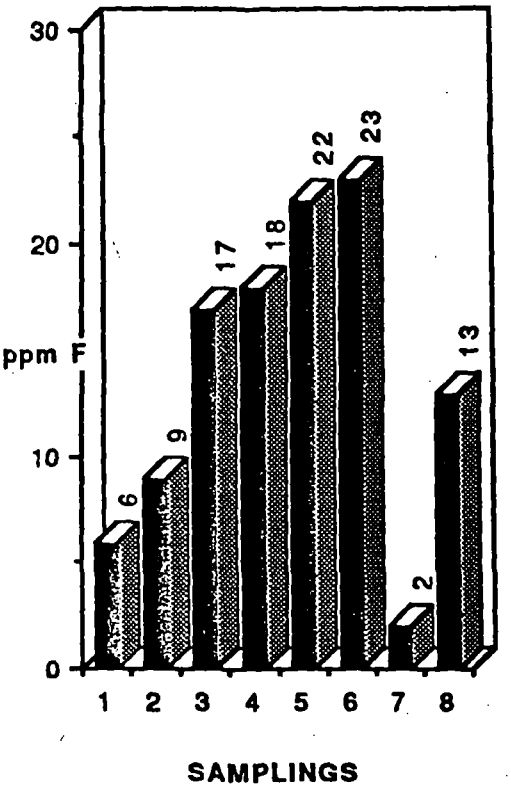


Figure 4

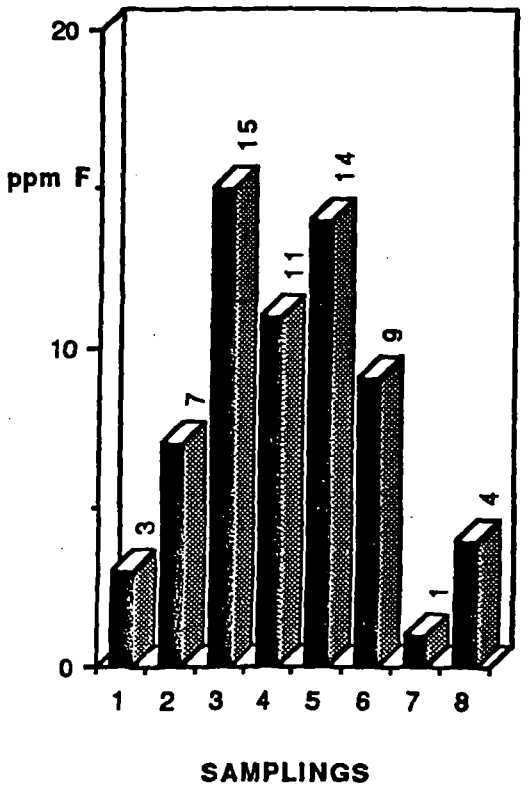
ALFALFA, AREA - O (#5 WEST B)



GRASS, AREA - P (#6 EAST)



GRASS, AREA - Q (#6 WEST)



GRASS, AREA - R (#7)

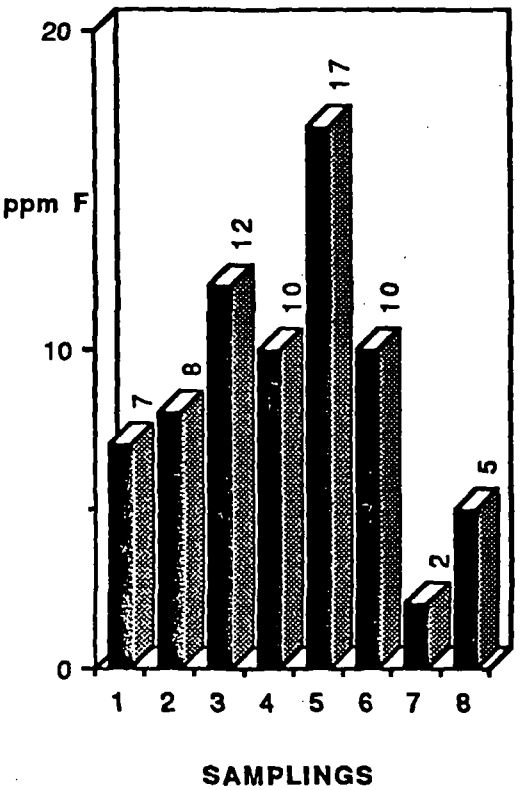


Figure 5

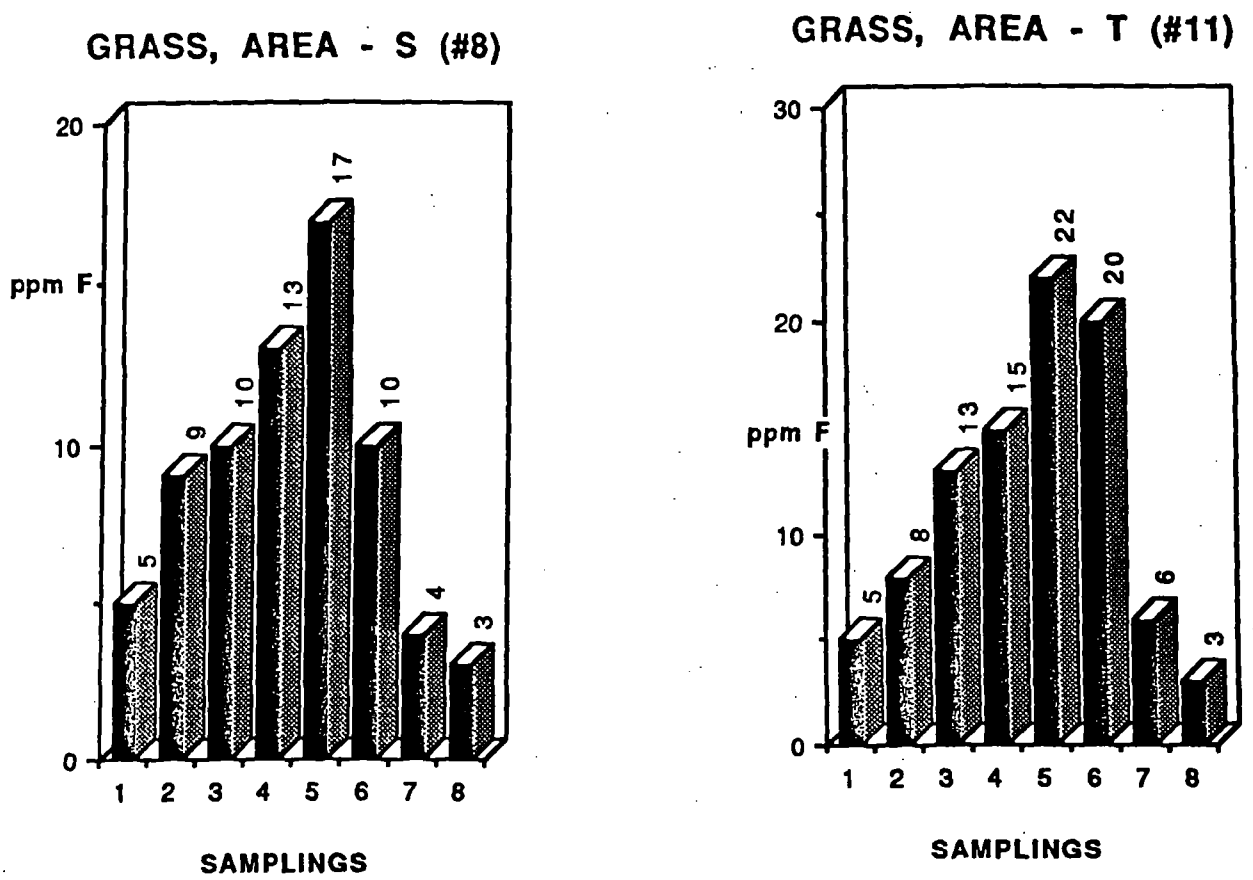

GRASS, AREA - S (#8)
20
10
0
ppm F
5
9
10
13
17
10
4
3
1 2 3 4 5 6 7 8
SAMPLINGS
GRASS, AREA - T (#11)
30
20
10
0
ppm F
5
8
13
15
22
20
6
3
1 2 3 4 5 6 7 8
SAMPLINGS
ALFALFA, AREA - U (#12)
20
10
0
ppm F
4
6
11
15
14
12
5
2
1 2 3 4 5 6 7 8
SAMPLINGS

FIGURE 6

POCATELLO-SITE LOCATIONS AND SEASONAL MEAN FLUORIDE VALUES

SITE/CROP - VALUE

GRASS

ALFALFA

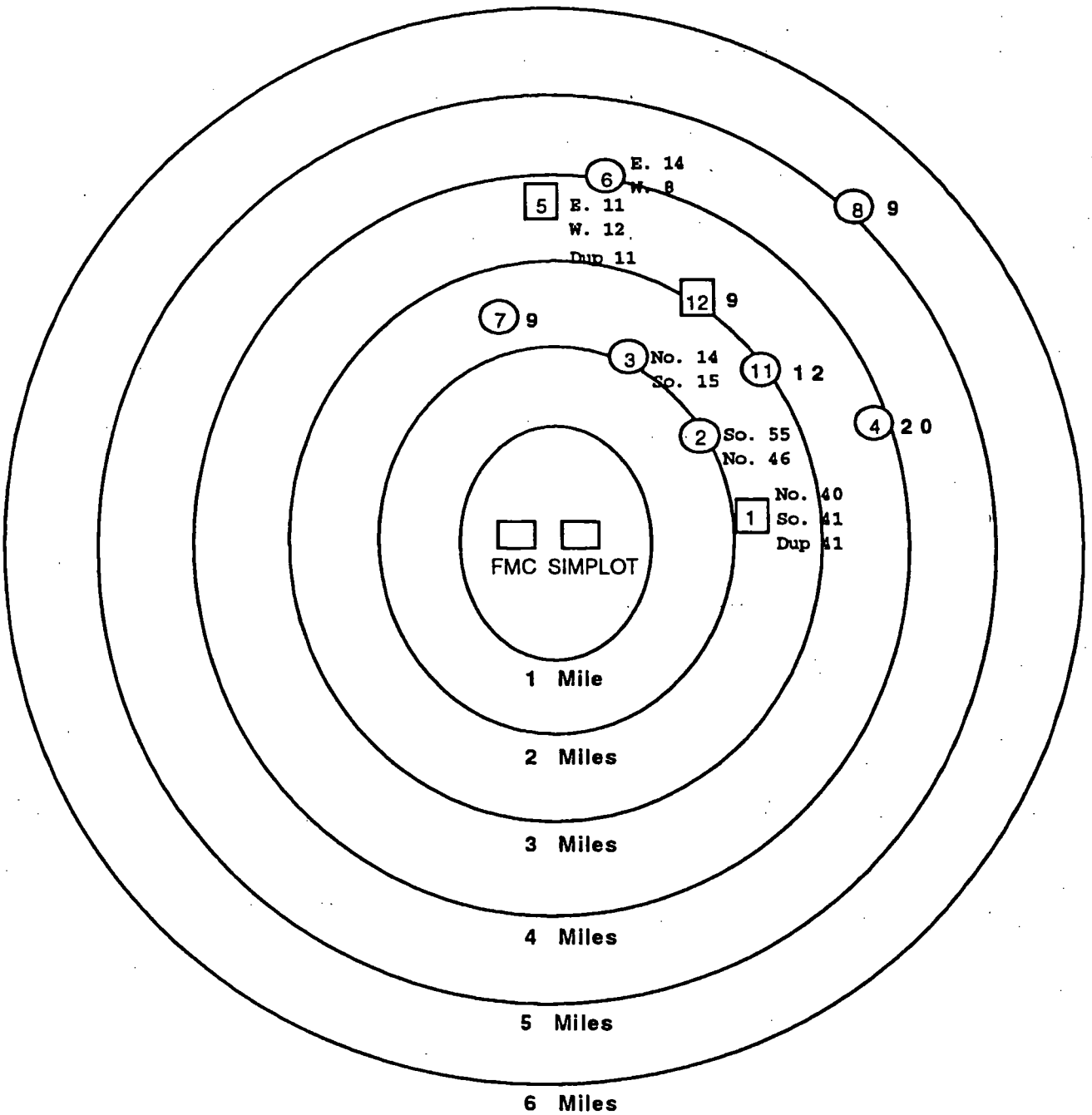
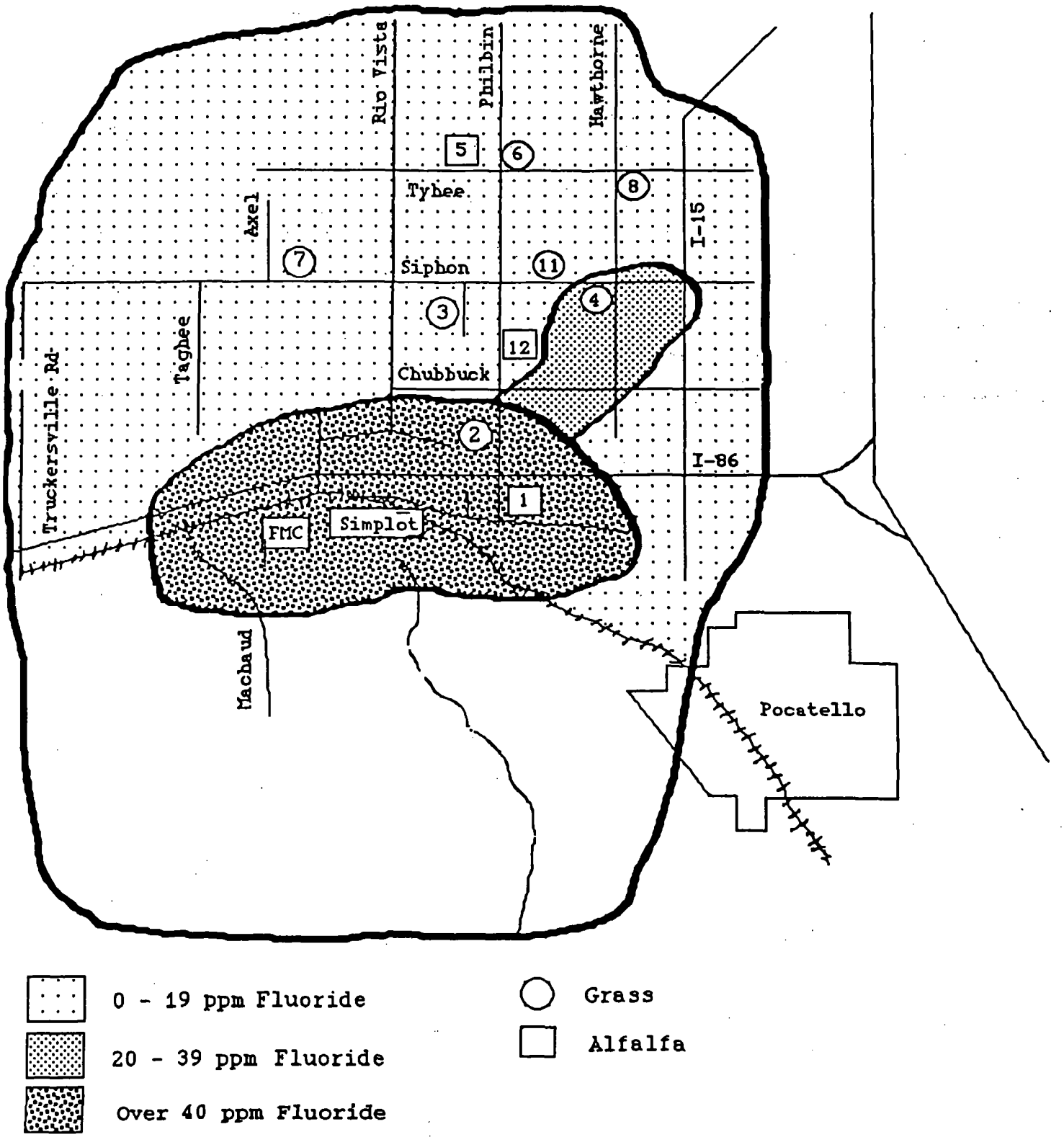


Figure 7


Rio Vista
Philbin
Hawthorne
Tybee
Axel
Siphon
I-15
Taghee
Truckersville Rd
Chubbuck
I-86
FMC
Simplot
Machaud
Pocatello
5
6
8
7
11
4
3
12
2
1
0 - 19 ppm Fluoride
20 - 39 ppm Fluoride
Over 40 ppm Fluoride
Grass
Alfalfa